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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/693,457

10/27/2003

Bong-Jun Jang

SEC.1098

2933

20987

7590

01/04/2007

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EXAMINER

TRINH, MICHAEL MANH

ART UNIT

PAPER NUMBER

2822

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

01/04/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/693,457

Applicant(s)

JANG, BONG-JUN

Examiner

Michael Trinh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6-8 and 10-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6-8 and 10-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

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DETAILED ACTION

*** This office action is in response to Applicant's amendment and RCE filed October 16, 2006. Claims 6-8,10-15 are pending.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 6-8,10-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant admitted prior art in view of Lee (US 6,214,751) and Lee et al. (US 6,819,969).

Applicant admitted prior art teaches pre-creating a process atmosphere in a processing chamber of a plasma processing apparatus being the same as one in which the substrate will be processed (Fig. 2, page 4). Applicant admitted prior art shows subsequently supplying the substrates in sequence into the chamber (Fig. 2, page 4).

Applicant admitted prior art discloses processing a batch of the substrates spraying a process gas (TEOS) through a showerhead into the chamber towards substrates disposed in the chamber and exciting the process gas using RF power to convert the process gas into plasma (pages 1-2). Applicant admitted prior art teaches the plasma being deposited on the substrates and a portion of the chamber (Fig. 2, pages 4-5). 7. In addition, Applicant admitted prior art shows discharging the batch of substrate from the chamber and cleaning the inside of the chamber once all of the wafers have been unloaded (Fig. 2, page 5). Applicant admitted prior art discloses heating the chamber during the cleaning (page 5). 8. Furthermore, Applicant admitted prior art shows after the chamber has been cleaned, and before any more substrates are loaded into the chamber supplying a gas into the chamber to reduce the temperature inside the chamber (Fig. 2, pages 1-4). Applicant admitted prior art shows cleaning employing RF power, oxygen

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and 02F6 (page 5). Applicant admitted prior art discloses processing another batch of substrates after the cleaning (Fig. 2). 9.

Applicant admitted prior art is silent about the supplying the process gas without exciting the gas with RF power.

However, Lee '751 is presented as evidence to show that in fact before any more substrates are loaded into the chamber the gas is not excited with RF power (col. 1, lines 10-65, col. 2, lines 1-65, col. 3, lines 55-67, col. 4, lines 1-65, col. 5, lines 22-30), wherein as shown in Table 2 (at col 4, line 43 through col 5) first and second set flow are performed without exciting the process gas with RF power, wherein, especially, the second set flow step (step 6 in Table 2; step S60 in Fig 2) as a pre-coating step is performed by supplying a process gas without exciting the process with RF power (no RF power as the RF power is turned off), and thereby without converting the process gas into plasma, wherein, thereafter that, in step 7 for coating (step 7 in Table 2, and step S62 in Fig 2), an RF power is then turned on for coating depositing (step 7 in Table 2, and step S62 in Fig 2). In addition, Lee et al. '969 shows supplying the process gas before any substrate being loaded (col. 6, lines 10-60).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to recognize that the process gas is not excited with RF power as suggested by Lee '751 and Lee et al. '969 in order to provide the time for removing any unwanted cleaning material on the walls of the chamber and to prevent particles to be formed in the wafer. Moreover, the subject matter as a whole would have been obvious to a person of ordinary skill in the art at the time of the invention to clean and deposit a layer on the substrate of Applicant admitted prior art employing the process of Lee '751 for cleaning and coating, wherein a pre-coating step is performed by supplying a process gas into the chamber without exciting the process with RF power, and thereby without converting the process gas into plasma, and thereafter, turning on the RF power for coat depositing (step 7 in Table 2, and step S62 in Fig 2). This is because of the desirability to remove an unwanted material deposited in the chamber, wherein processing time for complete one manufacturing process is reduced by the process of Lee '751, wherein by supplying a process gas into the chamber without exciting the process with RF power, and thereby without converting the process gas into plasma, during the pre-coating process, temperature prevailing inside the chamber is thereby reduced, inherently.

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Response to Arguments

Applicant's amendment and remarks filed October 16, 2006 have been fully considered but they are not persuasive, and to are also moot in view of the new ground(s) of rejection.

Lee '751 clearly additionally teaches (from steps 1-9, step 6 to step 7 in Table 2, and steps S60-S62 in Fig 2) performing a second set flow step as a pre-coating step by supplying a process gas into the chamber without exciting the process with RF power (no RF power as the RF power is turned off), and thereby without converting the process gas into plasma, and thereafter, turning on the RF power for coat depositing.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael M. Trinh whose telephone number is (571) 272-1847. The examiner can normally be reached on M-F: 9:00 Am to 5:30 Pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zandra Smith can be reached on (571) 272-2429. The central fax phone number is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).
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**Michael Trinh
Primary Examiner**